

DIPTERA FROM NEPAL

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SPHAEROCERIDAE



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*Pp. 53-74 ; 32 Text-figures*

BULLETIN OF  
THE BRITISH MUSEUM (NATURAL HISTORY)  
ENTOMOLOGY

Vol. 23 No. 3

LONDON: 1969

THE BULLETIN OF THE BRITISH MUSEUM (NATURAL HISTORY), instituted in 1949, is issued in five series corresponding to the Departments of the Museum, and an Historical series.

Parts will appear at irregular intervals as they become ready. Volumes will contain about three or four hundred pages, and will not necessarily be completed within one calendar year.

In 1965 a separate supplementary series of longer papers was instituted, numbered serially for each Department.

This paper is Vol. 23, No. 3 of the Entomological series. The abbreviated titles of periodicals cited follow those of the World List of Scientific Periodicals.

World List abbreviation:  
*Bull. Br. Mus. nat. Hist.* (Ent.).

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Issued 28 January, 1969

Price Ten Shillings

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## SPHAEROCERIDAE

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### SYNOPSIS

The Sphaeroceridae collected on the 1954 and 1961-62 British Museum Expeditions to Nepal are systematically treated along with specimens collected in neighbouring countries. Of the thirty-eight species collected, nine new species are described.

### INTRODUCTION

THIS paper is based mainly on material collected by Mr. R. L. Coe, entomologist on the 1961-62 British Museum (Natural History) Expedition to Eastern Nepal, from localities in the Taplejung District and Arun Valley. Also included are a few specimens collected by Mr. J. Quinlan in Western Nepal during 1954, by Mr. E. Brunetti at Darjeeling during 1913 and single specimens from Assam collected by Mr. R. Senior-White and Mr. C. B. Antram. All type material is in the British Museum (Natural History).

Very little has been written on the Sphaeroceridae of the Himalayas. Brunetti (1913 : 173-4) described *Limosina magna* from Kalek on the north-east frontier of India and *Limosina subinctipennis* (now *Leptocera (Rachispoda) subinctipennis* (Brun.)) from Assam. He later (1924 : 103) described *Limosina notatipennis* and *Limosina tenebrosa* and recorded *Limosina ornata* de Meijere (= *Leptocera (Poecilosomella) borboroides* (Walker)) from the Siju Cave, Garo Hills, Assam. *Limosina* Macquart *sensu* Brunetti must be regarded as synonymous with *Leptocera* Olivier *sensu lato*. The original descriptions of *Limosina magna*, *notatipennis* and *tenebrosa* are inadequate for the placing of these species in subgenera, and I have unfortunately been unable to examine the types in the Indian Museum, Calcutta. Richards (1962b) recorded nineteen species of Sphaeroceridae from Afghanistan, eighteen of which are found in Europe and one possibly new. Hackman (1965 : 37-38) described *Copromyza (Crumomyia) deemingi* from Sikkim. The mediterranean species *Leptocera (Coproica) digitata* (Duda) has been recorded from Turkestan, and I have seen specimens from Kirgiziya and Kazakhstan, but it is not represented in the Nepalese material.

My thanks are due to the late Mr. R. L. Coe for making his material available to me, to Prof. O. W. Richards of Imperial College of Science and Technology, London

and Messrs. H. Oldroyd, K. G. V. Smith and A. C. Pont of the British Museum (Natural History) (BMNH) for their kind help and advice, and to the Director, Institute for Agricultural Research, Samaru, Nigeria for allowing me the facilities to complete this paper.

## TAXONOMY

***Sphaerocera (Lotobia) pallidiventris*** (Meigen)

*Borborus pallidiventris* Meigen, 1830 : 204.

W. NEPAL: Ulleri, 6,000–7,000 ft., 1 ♂, 19.v.1954 (*J. Quinlan*).

Widespread in Europe and Africa. Richards (1962b : 177) recorded a specimen collected at an altitude of 1,320 m in Afghanistan. There are specimens in BMNH from Kirgiziya, Kazakhstan and Assam.

***Copromyza (Borborillus) marginatis*** (Adams)

*Borborus marginatis* Adams, 1905 : 198.

E. NEPAL: Taplejung Distr., Dobhan, c. 3,500 ft., shady places on shrubby slope above R. Tamur, 1 ♂, 8 ♀, 21–27.i.1962 (*R. L. Coe*).

Recorded from the Atlantic Islands, Africa, Madagascar, India, Philippines and Palau Is.

***Leptocera (Leptocera) curvinervis*** (Stenhammar)

*Limosina curvinervis* Stenhammar, 1853 : 406.

A very long series of both sexes was collected by Mr. J. Quinlan at Ulleri in Western Nepal and a similar series by Mr. R. L. Coe from various localities in Eastern Nepal. It would be pointless to list all the locality-data as the species is so common and widespread, having been recorded from Europe, the Atlantic Islands, Africa, Madagascar, Seychelles, Ceylon, India, Formosa, Java, New Guinea, Micronesia and Samoa. I have seen a single specimen from Australia and a long series from Sikkim.

***Leptocera (L.) nigrolimbata*** (Duda)

*Paracollinella nigrolimbata* Duda, 1925 : 60.

E. NEPAL: Taplejung Distr., between Sangu and Tamrang, c. 5,200 ft., mixed plants by damp cliff in deep river gorge, 1 ♂, i–ii.1962; Taplejung Distr., edge of mixed forest above Sangu, c. 6,500 ft., 1 ♂, 17.x.–1.xi.1961; Taplejung Distr., damp evergreen oak forest above Sangu, c. 9,200 ft., 1 ♀, 2–26.xi.1961; Taplejung Distr., Sangu, c. 6,200 ft., mixed vegetation by stream in gully, 1 ♂, 3 ♀, xi.1961–i.1962; Taplejung Distr., Sangu, c. 6,200 ft., mixed vegetation in deep gully, 1 ♀, 2.i.–13.ii.1962; Taplejung Distr., Dobhan, E. bank of R. Tamur, c. 3,500 ft., mixed vegetation by stream in deep gully, 1 ♂, i–ii.1962 (*R. L. Coe*).

INDIA: Darjeeling, 5 ♂, 4 ♀, 13–18.ix.1913 (*E. Brunetti*).

Described from Formosa.

***Leptocera (L.) paranigrolimbata* (Duda)**

*Paracollinella paranigrolimbata* Duda, 1925 : 61.

INDIA: Darjeeling, ♂, 13-18.ix.1913 (*E. Brunetti*).

Described from Formosa. There are two males in the BMNH from Assam.

***Leptocera (L.) ? koningsbergeri* (Duda)**

*Paracollinella koningsbergeri* Duda, 1925 : 49.

E. NEPAL: Taplejung Distr., between Sangu and Tamrang, c. 5,200 ft., mixed shrubs in deep gorge, 1 ♂, x-xi.1961 (*R. L. Coe*).

This specimen agrees well with the original description, but has a faint infuscate band across the middle of the wing. Described from Sumatra and W. Java. The "Buitenzon" given by Duda as a type locality is a misspelling of Buitenzorg, now named Bogor.

***Leptocera (Rachispoda) subtinctipennis* (Brunetti)**

*Limosina subtinctipennis* Brunetti, 1913 : 174.

E. NEPAL: Taplejung Distr., Sangu, c. 6,200 ft., mixed vegetation by stream in gully, 1 ♂, xi.1961-i.1962; same locality, evergreen scrub, 1 ♂, 5-13.x.1961; Arun Valley, below Tumlingtar, River Sabhaya, west shore, c. 1800 ft., dead leaves lying on sandy shore, 1 ♀, 22.xii.1961 (*R. L. Coe*).

A common species distributed across the tropics of the Old World from West Africa to the Caroline and Solomon Islands.

***Leptocera (Rachispoda) sp. near *divergens** (Duda)**

E. NEPAL: Taplejung Distr., damp evergreen oak forest above Sangu, c. 9,200 ft., 1 ♀, 2-26.xi.1961 (*R. L. Coe*).

The single teneral specimen runs to *Collinella divergens* Duda in Duda's 1925 key, but differs from his description for that species in having a very weakly developed interantennal keel, a strongly projecting mouth margin, and the scapular present only as a very weak hair.

***Leptocera (Opacifrons) pseudimpudica sp. n.***

(Text-figs. 1, 2)

This species agrees almost perfectly with Duda's original description of *Opacifrons impudica*. However, as that species was described from the Andes and has not been recorded from the Pacific, I prefer to regard the two species as separate rather than risk a misidentification.

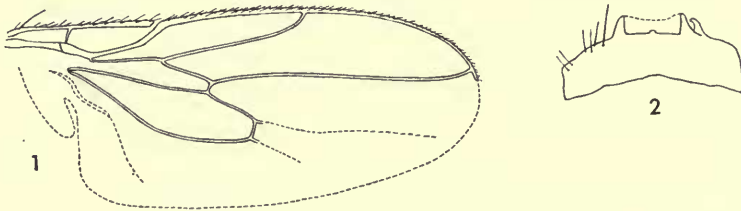
♂. A small dull black species, heavily whitish dusted, especially on the face and jowls; legs dirty yellow, but femora, tibiae and fore tarsus noticeably infuscated; halteres dirty yellow; wings whitish hyaline with light brown veins. Head deeper than long; jowls one-quarter of

height of eye; face moderately produced between the antennae, which between their bases form an angle of  $100^{\circ}$ ; arista long-haired, nearly four times as long as remainder of antenna, of which the third segment is noticeably long-haired; four pairs of fine interfrontal bristles; postvertical bristle as long as ocellar; all head-bristles long; frontal triangle less heavily dusted than remainder of frons. Dorsum of thorax less heavily dusted than head, with two pairs of strong dorsocentral bristles and six rows of interdorsocentral setulae between the more anterior pair; a pair of prescutellar acrostical hairs enlarged; scutellum long, with the usual two pairs of bristles, the shorter anterior pair as long as scutellum and apical pair as long as dorsum of thorax; fore femur with a row of weak posterodorsal and posteroventral hairs; fore tarsus long, the segments becoming progressively more flattened towards the apex; mid tibia with a short anterodorsal bristle at 0.7 of its length, a medium one at 0.23 and a long one at 0.82, a medium posterodorsal at 0.7, no apical ventral, and the apical two-thirds of its ventral surface set with minute stout bristles; ventral bristle of mid basitarsus longer than the basitarsus is wide; hind leg normal. Wing (Text-fig. 1) longer than abdomen; second costal sector shorter than third; costa overpassing the slightly sinuate third vein; fold of fourth vein extending to wing-margin; fifth vein weakly produced beyond discal cell; alula narrow. Abdomen with only weak pale hairs; pregenital sternite (Text-fig. 2) with two widely-separated thumb-like projections and an inwardly-directed hook-like projection on the posterior margin; claspers strap-like, weakly infuscated; posterior gonapophysis long, pointed and downwardly-directed. Length 1.6 mm.

♀ resembling ♂, but mid tibia lacking the numerous short stout bristles ventrally; last tergite strongly shining; cercus with pale upwardly-directed sharp apical tooth.

Holotype ♂. E. NEPAL: Taplejung Distr., river banks below Tamrang Bridge, c. 5,500 ft., x-xi. 1961 (R. L. Coe).

Paratypes. 2 ♂, 4 ♀, same data; Taplejung Distr., above Sangu, c. 6,500 ft., evergreen scrub, 2 ♂, 5-13.x. 1961; Taplejung Distr., Sangu, c. 6,200 ft., mixed vegetation by stream in gully, 2 ♂, ix-x. 1961; Taplejung Distr., edge of mixed forest above Sangu, c. 6,500 ft., 1 ♀, 17.x.-1.xi. 1961 (R. L. Coe).



FIGS. 1-2. *Leptocera (Opacifrons) pseudimpudica* sp. n. 1, right wing; 2, ♂ pregenital sternite.

KEY TO MALES OF SPECIES OF *Leptocera (Poecilosomella)* RECORDED  
FROM THE HIMALAYAS

- |   |   |  |   |
|---|---|--|---|
| 1 | Hairs on arista very long; costal hairs long and fine; second costal sector short; wing brownish with pale markings on the crossveins | <i>borboroides</i> (Walker) (widespread in Asia) |   |
| - | Hairs on arista short; costal hairs minute, but if long on first sector, then robust; wing pattern variable                           |  | 2 |
| 2 | Second vein bearing a distinct preapical stump-vein   |  | 3 |
| - | Second vein lacking a stump-vein  |  | 4 |

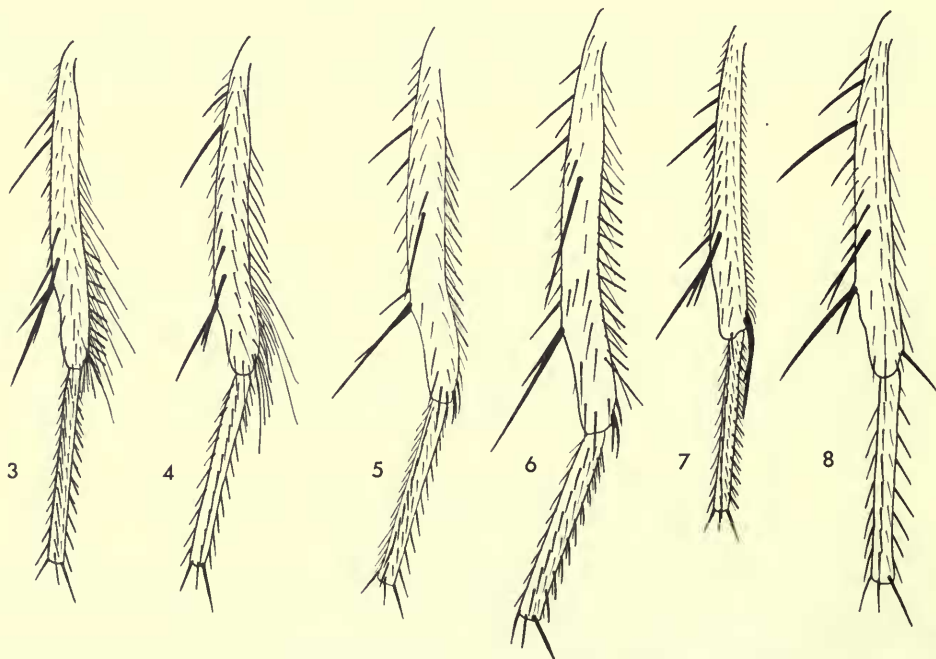


*Leptocera (Poecilosomella) aciculata* sp. n.

(Text-figs. 3, 9, 15)

A species closely resembling *L. pallidimana* Duda, but differing from it in the chaetotaxy of the mid tibia; leg coloration; and the structure of the male genitalia, in which species the clasper has a semi-triangular ploughshare-shaped anterior lobe and a narrow posterior lobe bearing a pale apical tooth.

♂. Ground colour black; jowls and frons anteriorly and antenna basally dirty orange; pleural sutures yellow; haltere black with a yellow stem; all tibiae basally and apically narrowly yellow, the hind tibia distinctly and the mid tibia indistinctly with a yellow band centrally; basal half of fore tarsus infuscated, otherwise tarsus vivid white; mid tarsus entirely yellow; hind basitarsus and next segment black, both narrowly white apically, the next two segments yellowish white, the last black. Wing yellowish, with a white mark halfway along the first vein extending downwards into the discal cell, another connecting the crossveins and a third along the centre of the last section of the third vein; dark markings on the extreme wing base, the humeral vein, from the apex of first vein to junction of second and third veins, on apex of second vein, and also, though barely visible, on base and apex of ultimate section of third vein. Lightly dusted with heavier, silvery dusting in patches. Head deeper than long; 4-5 pairs almost equally-developed interfrontal bristles; the posterior of the two orbital bristles the longer; internal and external vertical bristles subequal; one pair of strong postverticals; frons strongly silver-dusted on a median line, around ocelli, at bases of all bristles, on jowls, first antennal



FIGS. 3-8. *Leptocera (Poecilosomella)* spp., ♂ right tibia and basitarsus. 3, *aciculata* sp. n.; 4, *himalayensis* sp. n.; 5, *annulitibia* sp. n.; 6, *nepalensis* sp. n.; 7, *brunettii* sp. n.; 8, *varians* Duda.



segment and at either side of base of antenna; interantennal prominence weakly developed; vibrissa as long as an antenna; jowls three-sevenths of height of eye; third antennal segment one and two-thirds times as long as second, rather pointed, with dense pilosity; arista two and one-third times as long as remainder of antenna and with hairs of medium length. Thorax with chaetotaxy typical of the subgenus; 8–10 rows of interdorsocentral setulae anteriorly; a single pair of prescutellar acrostical hairs enlarged; scutellum as broad as long, rounded apically; fore coxa strongly haired; fore femur with a few posterodorsal bristles at 0.7 of its length and with a row of long straight posteroventral hairs along its whole length; fore tibia rather densely haired; mid femur not as strongly swollen as fore or hind, with one long erect anteroventral bristle at extreme base; mid tibia (Text-fig. 3) with a long anterior bristle at 0.6 of its length and a shorter one at 0.52, a long anterodorsal at 0.28 and another still longer at 0.72, this last surmounted by a smaller at 0.64, a posterodorsal paired with and shorter than most apical antero-dorsal, a shorter posterodorsal at 0.32 and another still shorter at 0.56, ventrally on apical half with long hairs, and amongst these on apical third are shorter, stouter and more erect hairs; mid basitarsus half as long as tibia and one and one-third times as long as second segment; hind femur strongly swollen, with a long erect basal ventral hair. Wing (Text-fig. 9) with second vein lacking a stump-vein and strongly upcurved to costa, though not quite at right angles to it; third vein strongly and evenly curved forward, ending a little further in front of wing-tip than fold of fourth vein ends behind it, and slightly overpassed by costa; second section of fourth vein slightly longer than posterior crossvein and only two-thirds times as long as second section of third vein; second costal sector slightly longer than third; alula normal. Abdomen with long lateral marginal bristles on tergites; genital capsule (Text-fig. 15) with numerous rather sinuate hairs, especially ventrally; clasper posteriorly near base with numerous downwardly-directed fine hairs, the anterior lobe sickle-shaped, the posterior squat and bearing a short black curved apical tooth; the slightly asymmetrical pregenital sternite half as wide as abdomen, with a small median apical keel bearing minute dense pile. Length 2.5 mm. ♀ unknown.

Holotype ♂. E. NEPAL: Taplejung Distr., Sangu, c. 6,200 ft., mixed vegetation by stream in gully, ix-x. 1961 (R. L. Coe).

Paratypes. Same locality, rotting fruits of bhor tree on ground, 1 ♂, 7–31. x. 1961; Taplejung Distr., Dobhan, c. 3,500 ft., small pockets of plants on arid slopes above R. Maewa, 1 ♂, 2. i. 1962 (R. L. Coe).

### *Leptocera (Poecilosomella) himalayensis* sp. n.

(Text-figs. 4, 11, 16)

Similar to the preceding species (*L. aciculata*) but differing from it in the chaetotaxy of the mid tibia, leg coloration, wing markings and the structure of the male genitalia.

♂. Brownish black, paler on antenna, face, frons and pleural sutures, and with dusting typical of the subgenus; all tibiae yellowish on a narrow basal, broad central and broad apical band; tarsi yellowish, with apical segment infuscated, the bases of all basitarsi and the second segment of hind tarsus infuscated. Wing (Text-fig. 11) yellowish with yellow veins; a white mark covering and connecting crossveins; dark marks at base, junction of second and third veins, and apices of first, second and third veins. Haltere yellow. Head deeper than long with semi-oblique eye; jowls two-sevenths times height of eye; four pairs of weak interfrontal bristles; the posterior of the two orbital bristles slightly the longer; internal vertical bristle longer than external and as long as ocellar; postocular hair adjacent to external vertical well developed; vibrissa long, with only weak hairs behind it; arista two and a half times as long as remainder of antenna, and with hairs of moderate length. Thorax with chaetotaxy and dusting as in preceding species; mid femur with a row of five weak anterior bristles on apical half, preapically with a distinct anterior

bristle; mid tibia (Text-fig. 4) with a long anterior bristle at 0.7 of its length surmounted by a bristle half as long, a long anterodorsal at 0.8 and a shorter one at 0.32, this last surmounted by a bristle of half its length, a shorter posterodorsal paired with the most apical anterodorsal and two short posterodorsal bristles at 0.4 and 0.6; apical part ventrally with long fine hairs, lacking a stronger apical ventral bristle. Wing (Text-fig. 11) with second and third costal sectors equal; costa slightly overpassing apex of third vein; last developed section of fourth vein equal to length of posterior crossvein; fourth vein reaching wing-margin as a fold. Abdomen with fine hairs; a long hair on lateral margins of fourth and fifth tergites; genital capsule (Text-fig. 16) with numerous fine hairs; posterior lobe of clasper bearing a droplet-shaped apical tooth; posterior gonapophysis broad. Length about 2.7 mm.

♀ resembling ♂, but mid tibia lacking the long fine hairing ventrally and armed with an apical ventral bristle that is longer than width of tibia; cercus rounded apically, densely covered in short pile and bearing a few long fine rather sinuate hairs.

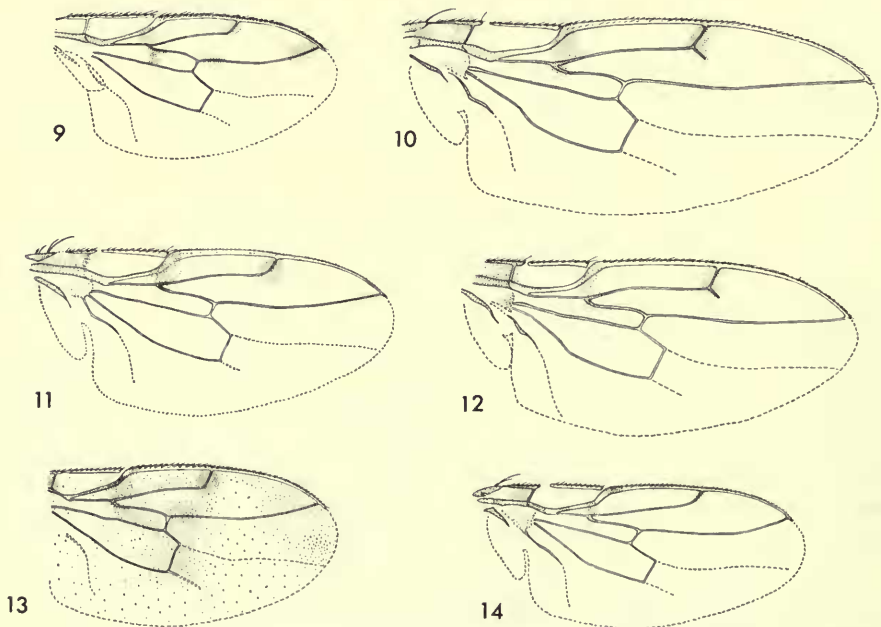
Holotype ♂. E. NEPAL: Taplejung Distr., river banks below Tamrang Bridge, c. 5,500 ft., x-xi. 1961 (R. L. Coe).

Paratypes. 1 ♂, 1 ♀, same data.

***Leptocera (Poecilosomella) annulitibia* sp. n.**

(Text-figs. 5, 10, 18)

Similar to the preceding species (*L. himalayensis*), but differing from it in leg coloration and chaetotaxy, the presence of a stump-vein on the second wing-vein, the structure of the male genitalia and other minor points.



FIGS. 9-14. *Leptocera (Poecilosomella)* spp., right wing. 9, *aciculata* sp. n.; 10, *annulitibia* sp. n.; 11, *himalayensis* sp. n.; 12, *nepalensis* sp. n.; 13, *brunettii* sp. n.; 14, *varians* Duda.

♂. Coloration as in *L. himalayensis*, but fore tibia lacking a central annulus, and the two apical segments of fore and hind tarsi infuscated. Head deeper than long; jowls two-fifths times height of eye; three pairs of weak interfrontal bristles; orbitals equal; verticals equal; arista three times length of remainder of antenna, with hairs of moderate length; fore femur with a row of weak posterodorsal bristles on apical half and a row of weak posteroventrals on apical quarter, ventrally with dense fine hairs that are not as long as femur is wide; fore tibia with similar hairing; mid femur with a strong preapical anterior bristle and a row of four shorter bristles leading up to it, and an apical posterior bristle; mid tibia (Text-fig. 5) with a long anterodorsal bristle at one-quarter and three-quarters of its length, both these bristles surmounted by a much shorter bristle, much shorter posterodorsals paired with the long anterodorsals and several short posterodorsals between them, a long anterior bristle surmounted by a much shorter one intermediate between the long anterodorsals, ventrally on the apical two-thirds with stout erect hairs and with several short apical bristles; hind leg normal. Wing (Text-fig. 10) with a distinct stump-vein preapically on second vein; fourth vein distinctly produced as a fold to wing-margin and ending slightly nearer wing-tip than third vein; fifth vein not reaching wing-margin as a fold; alula normal. Abdomen normal; pregenital sternite (Text-fig. 18) with a narrow and projecting median apical keel bearing dense pile and with two hairs at its base; posterior lobe of clasper bearing a black tooth; posterior gonapophysis broad and pointed. Length about 2.7 mm.

♀ resembling ♂, but frons darker; the long ventral hairing on fore and mid legs lacking; mid tibia with one of the apical ventral bristles, though short, distinctly longer than the others; cercus rounded apically, with a few fine sinuate hairs.

Holotype ♂. E. NEPAL: Taplejung Distr., river banks below Tamrang Bridge, c. 5,500 ft., x-xi.1961 (*R. L. Coe*).

Paratypes. 1 ♂, 1 ♀, same data.

### *Leptocera (Poecilosomella) nepalensis* sp. n.

(Text-figs. 6, 12, 17)

♂. Almost exactly resembling the preceding species (*L. annulitibia*), but differing from it in the following respects: Four pairs of weak interfrontal bristles; the long anterior bristle on mid tibia (Text-fig. 6) situated much closer to the more basal of the two long anterodorsal bristles; wing (Text-fig. 12) slightly broader; pregenital sternite (Text-fig. 17) with a wider median apical keel; apical tooth on posterior lobe of clasper broader, resembling a molar; posterior gonapophysis narrower and rounded apically, and several other small differences in male genitalia. Length about 2.7 mm.

♀ unknown.

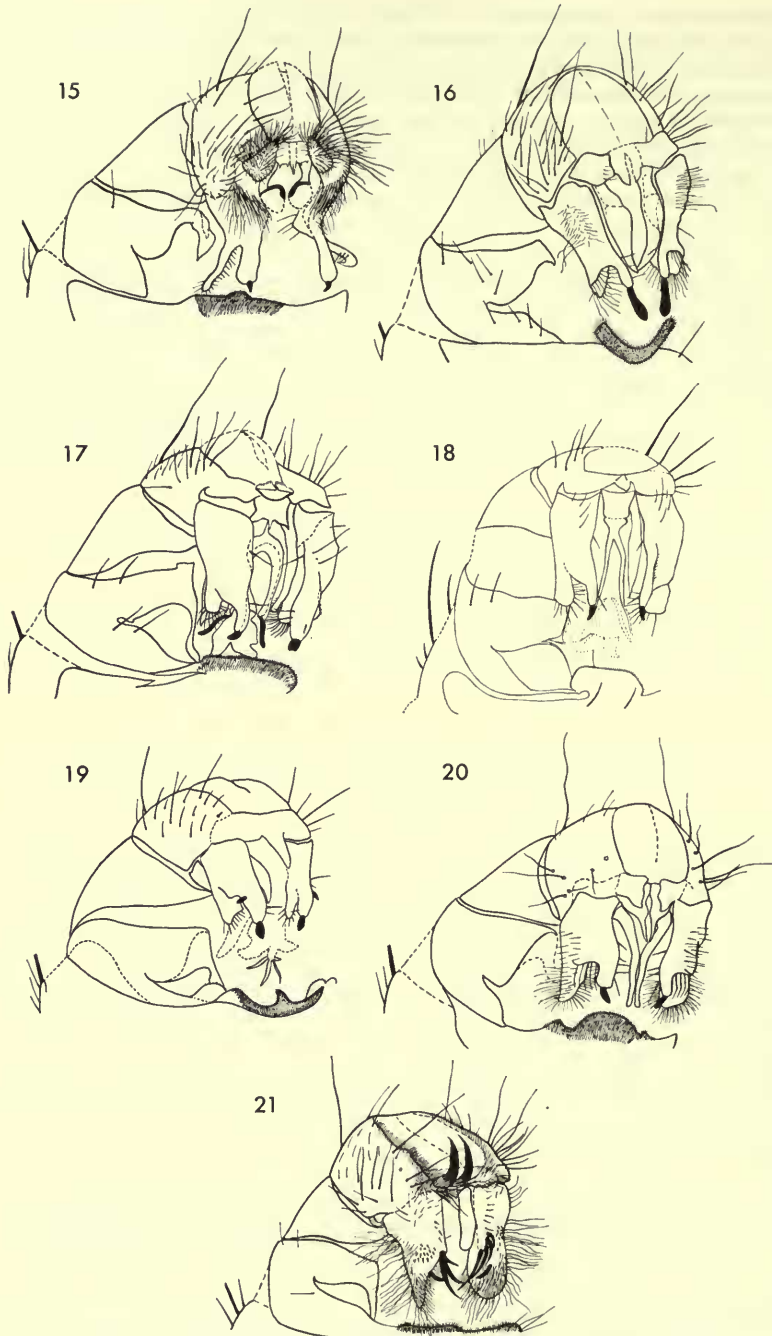
Holotype ♂. E. NEPAL: Taplejung Distr., river banks below Tamrang Bridge, c. 5,500 ft., x-xi.1961 (*R. L. Coe*).

Paratypes. 1 ♂, same data; INDIA: Darjeeling, 1 ♂, 13-18.ix.1913 (*E. Brunetti*).

### *Leptocera (Poecilosomella) brunettii* sp. n.

(Text-figs. 7, 13, 19)

A species more closely resembling *L. furcata* Duda than any other species, but easily distinguishable from it on account of the absence of a stump-vein preapically on the second vein and the presence of a very long apical ventral bristle on the mid tibia.



FIGS. 15-21. *Leptocera* (*Poecilosomella*) spp., apex of abdomen. 15, *aciculata* sp. n.; 16, *himalayensis* sp. n.; 17, *nepalensis* sp. n.; 18, *annulitibia* sp. n.; 19, *brunettii* sp. n.; 20, sp. near *brunettii* sp. n.; 21, *varians* Duda.

♂. Ground colour black; jowls, frons anteriorly and antenna dirty yellow; haltere, extreme bases and apices of all tibiae, apices of all basitarsi, the next three segments on fore and mid tarsus, and apex of second segment and all of third and fourth segments of hind tarsus yellow. Wing (Text-fig. 13) yellowish, with rather ill-defined brown markings on humeral crossvein, from apex of first across junction of second and third veins, at apex of second, across centre of wing and at apex; crossveins and section of fourth vein connecting them white. Dusting effect typical of the subgenus; head deeper than long; eye two and one-third times as high as jowls, noticeably emarginate at base of antenna; third antennal segment large, wide and heavily pilose; arista 2.4 times as long as remainder of antenna, with hairs of moderate length; vertical bristles subequal, as long as vibrissa; postvertical bristle as long as inwardly-directed upper postocular; no enlarged setae preceding dorsocentral bristles, ten rows interdorsocentral setulae between the anterior pair; the prescutellar acrosticals enlarged; scutellum broader than long, rather truncate apically; all legs short-haired; mid femur with a row of five anterior bristles on the apical third; mid-tibia (Text-fig. 7) with a long anterior bristle situated at 0.72 of its length and surmounted by a much shorter bristle, a long anterodorsal at 0.33 and another at 0.78, both of these surmounted by a shorter bristle, a rather short posterodorsal at 0.71 and a very short one at 0.4, the apical ventral bristle half as long as the basitarsus and surrounded at its base by several much shorter and weaker bristles. Wing (Text-fig. 13) broad; costa slightly overpassing third vein; second costal sector a little shorter than third; second vein angularly upcurved to costa; third vein strongly curved forwards, ending further in front of wing-tip than fold of fourth vein ends behind; posterior crossvein longer than distance between crossveins; alula rather narrow but rounded apically. Abdomen normal; tergites bearing single apical bristles laterally and a few weak hairs on posterior margins; pregenital sternite (Text-fig. 19) with a pilose median apical keel; posterior lobe of clasper with a black apical tooth and another on external surface; posterior gonapophysis short, broad and apically pointed. Length about 2 mm.

♀ unknown.

Holotype ♂. INDIA: Darjeeling, 13-18.ix.1913 (*E. Brunetti*).

*Leptocera (Poecilosomella)* sp. near *brunettii* Deeming

(Text-fig. 20)

A single male of an undescribed species very closely resembling the preceding species, having identical wing-markings and the same distinctive chaetotaxy of the mid tibia. However, in this species the second vein is less angularly upcurved to the costa, the second and third costal sectors are equal, and there are differences in the male genitalia (Text-fig. 20), these being the lack of the external tooth on the posterior lobe of the clasper, and the long, thin, sinuous and apically rounded shape of the posterior gonapophysis.

As the specimen is in poor condition it is deemed an insufficient basis for the erection of a new species. A figure of the male genitalia is given to facilitate the separation of the two species.

ASSAM: Shillong, 1 ♂, 16.x.1920 (*R. Senior-White*).

*Leptocera (Limosina) mirabilis* Collin

*Limosina mirabilis* Collin, 1902 : 19.

E. NEPAL: Taplejung Distr., damp evergreen oak forest above Sangu, c. 9,200 ft., 1 ♀, 2-26.xi.1961; Taplejung Distr., above Sangu, c. 6,500 ft., swarming on cowdung, 1 ♀, 5.x.1961 (*R. L. Coe*).

Recorded from North America, Europe and New Zealand.

***Leptocera (Limosina) moesta*** Villeneuve

*Limosina (Leptocera) moesta* Villeneuve, 1917 : 337.

W. NEPAL: Bakhri Kharka, 5,500 ft., 1 ♂, 24.iv.1954 (*J. Quinlan*); E. NEPAL: Taplejung Distr., river banks below Tamrang Bridge, c. 5,500 ft., 1 ♂, x-xi.1961 (*R. L. Coe*).

A common European species.

***Leptocera (Limosina) brevicostata*** Duda

*Limosina brevicostata* Duda, 1918 : 183.

E. NEPAL: Taplejung Distr., above Sangu, c. 6,500 ft., swarming on cowdung, 1 ♂, 5.x.1961; Taplejung Distr., below Sangu, c. 6,000 ft., by stream in shady ravine, 1 ♀, 30.x.1961 (*R. L. Coe*).

Described from Europe, the species is widely distributed in the Old World, its distribution extending as far east as Polynesia. Duda (1925 : 188) described a variety from the Orient and New Guinea under the name of *Scotophilella brevicostata* var. *rufifrons* on the basis of a slight variation in coloration, wing venation and tarsal enlargement. I prefer to regard the species as variable, as specimens that I have seen from Uganda, which agree with var. *rufifrons* in having very swollen hind tarsi, have the venation and coloration of the typical form. Other specimens from entirely different regions have been difficult to place in either one form or the other. A specimen in BMNH from N. Rhodesia was reared in company with *Sepsis lateralis* Wied. from a dead but unparasitized *Nomadacris septemfasciata* Serv. (Acrididae).

***Leptocera (Limosina) lutea*** Richards

*Leptocera (Limosina) lutea* Richards, 1963b : 127.

E. NEPAL: Taplejung Distr., Dobhan, c. 3,500 ft., shady places on shrubby slope above River Tamur, 1 ♂, 1 ♀, 21-27.i.1962 (*R. L. Coe*).

Described from W. Caroline Islands. There are specimens in the Zoological Museum, Copenhagen from the Philippines.

***Leptocera (Limosina) rufilabris*** Stenhammar

*Limosina rufilabris* Stenhammar, 1855 : 408.

E. NEPAL: Taplejung Distr., between Sangu and Tamrang, c. 5,200 ft., mixed plants by damp cliff in deep river gorge, 2 ♂, i-ii.1962 (*R. L. Coe*).

W. NEPAL: 2 mls. S.W. of Rambrong, 1 ♂, 8,000 ft. (*J. Quinlan*).

A common European species.

***Leptocera (Limosina)*** sp. near ***rufilabris*** Stenhammar

E. NEPAL: Taplejung Distr., Sangu, c. 6,200 ft., mixed vegetation by stream in gully, 1 ♀, xi.1961-i.1962; Taplejung Distr., edge of mixed forest above Sangu, c. 6,500 ft., 1 ♀, 17.x-i.xi.1961 (*R. L. Coe*).

Both specimens are slightly larger and longer-winged than typical *rufilabris*, and the legs are more yellowish as in *L. femorina* Richards, but the second costal sector is not as thickened as it is in that species.

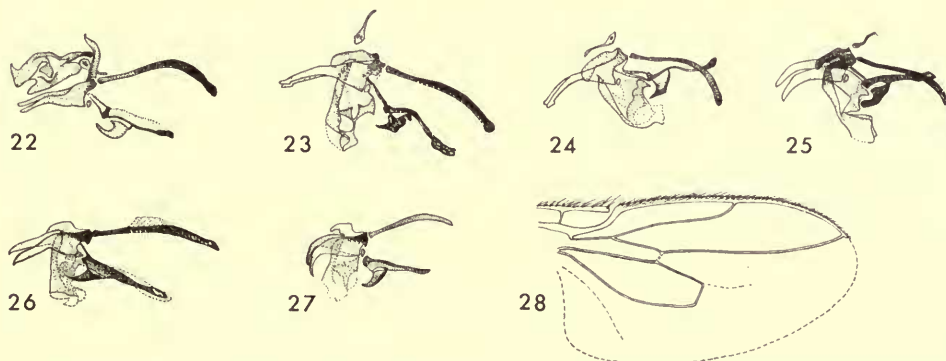
*Leptocera (Limosina) ? fucata* Rondani

(Text-figs. 22 to 27)

*Limosina fucata* Rondani, 1880 : 19.

E. NEPAL: Taplejung Distr., below Sangu, c. 6,000 ft., by stream in shady ravine, 1 ♂, 30.x.1961 (R. L. Coe).

This species exhibits such a diversity of form that I am inclined to regard it as a complex of species. Richards (1952 : 89) described a very closely-related species *Leptocera trichopyga* from Austria, differing from *L. fucata* in wing venation and the chaetotaxy of the mid leg. The Nepalese specimen and specimens from various localities in Europe that I have seen have just such a wing venation as *L. trichopyga*, and between them have a complete range of development of the apical ventral bristle of the mid tibia from that described by Duda for *fucata* (normal) to that described by Richards for *trichopyga* (absent). However, all these specimens lack the enlarged mid basitarsal bristle present in *trichopyga*. Examination of the claspers and internal genitalia of the Nepalese male and comparison with those of the European specimens and an uncertainly-identified *L. fucata* (Coe, 1962 : 118) from Macedonia leads one to no definite conclusion as to its identity or the relationship between the European specimens examined. A great deal more material will have to be examined before it can be decided whether *L. fucata* is merely a very variable species or whether there are other species commonly confused with it. *L. fucata* was described from Europe, has been redescribed with wing-figures by Duda (1918 : 148, fig. 42 and 1938 : 123, fig. 39), and a short redescription is given by Collin (1956 :



FIGS. 22-28. *Leptocera (Limosina)* spp. 22-27, *?fucata* Rond., ♂ internal genitalia. 22, Nepal, Taplejung Distr.; 23, Germany (Göttingen); 24, Germany (Teutoburger Wald); 25, Austria (Ötz); 26, Italy (Dolomites); 27, Jugoslavia (Otesevo). 28, *coei* sp. n., right wing.

173) in recording the species from Britain under the synonym *Limosina verticella* Stenhammar.

***Leptocera (Limosina) ? fungicola* Haliday**

*Limosina fungicola* Haliday, 1836 : 330.

E. NEPAL: Taplejung Distr., between Sangu and Tamrang, c. 5,200 ft., mixed plants by damp cliff in deep river gorge, 1 ♂, i-ii. 1962 (*R. L. Coe*).

This specimen has a median apical keel on the pregenital sternite, but agrees in all other respects with *L. fungicola*.

***Leptocera (Limosina)* sp. (1) near *paraminima* (Duda)**

E. NEPAL: Taplejung Distr., between Sangu and Tamrang, c. 5,200 ft., mixed shrubs in deep gorge, 1 ♂, x-xi. 1961; Taplejung Distr., river banks below Tamrang Bridge, c. 5,500 ft., 2 ♂, x-xi. 1961; Taplejung Distr., Dobhan, c. 3,500 ft., spray-splashed rocks in River Maewa, 1 ♂, 25.i. 1962 (*R. L. Coe*).

This species runs to *Scotophilella paraminima* Duda in Duda's 1925 key, but differs from it in that the second section of the fourth vein is over twice as long as the posterior crossvein. As the description, based on a single female, is scanty and too inadequate for comparison, the species is left undescribed.

***Leptocera (Limosina)* sp. (2) near *paraminima* (Duda)**

E. NEPAL: Taplejung Distr., Sangu, c. 6,200 ft., mixed vegetation by stream in gully, 1 ♂, xi. 1961-i. 1962 (*R. L. Coe*).

This species differs from the preceding in the presence of a large and rounded median apical keel on the pregenital sternite in the male. A single female labelled Taplejung Distr., between Sangu and Tamrang, c. 5,200 ft., mixed plants by damp cliff in deep river gorge, i-ii. 1962 may belong to either this or the preceding species.

***Leptocera (Limosina)* sp. (1) near *schmitzi* (Duda)**

E. NEPAL: Taplejung Distr., Sangu, c. 6,200 ft., mixed vegetation by stream in gully, 1 ♂, xi. 1961-i. 1962 (*R. L. Coe*).

Superficially almost exactly resembling *L. schmitzi*, but differing from it in having a well developed median apical keel on the pregenital sternite, a smaller genital capsule and less quadrate claspers.

***Leptocera (Limosina)* sp. (2) near *schmitzi* (Duda)**

E. NEPAL: Taplejung Distr., between Sangu and Tamrang, c. 5,200 ft., mixed plants by damp cliff in deep river gorge, 1 ♂, 1 ♀, i-ii. 1962 (*R. L. Coe*).

Similar to the preceding species, but differing from it and *L. schmitzi* in the dirty yellow coloration of the fore coxa. In the female the second costal sector is slightly shorter.



*Leptocera (Limosina)* sp. near *boliviensis* (Duda)

E. NEPAL: Taplejung Distr., between Sangu and Tamrang, c. 5,500 ft., mixed vegetation by stream in deep gully, 1 ♂, i-ii. 1962 (R. L. Coe).

Differs from *L. boliviensis* in the wing being narrower, the second costal sector longer and in other respects. All legs are bright yellow, only the mid and hind femora being somewhat infuscated; fore coxa with a pair of short stout bristles on inner surface near base; pregenital sternite very long and with a distinct median apical keel.

*Leptocera (Limosina)* sp. near *penetralis* Collin

E. NEPAL: Taplejung Distr., between Sangu and Tamrang, c. 5,200 ft., mixed plants by damp cliff in deep river gorge, 1 ♀, i-ii. 1962 (R. L. Coe).

Differs from *L. penetralis* in that the apical section of the third vein, though straight, ends nearly as far in front of the wing-tip as the fold of the fourth vein ends behind it.

*Leptocera (Limosina) coei* sp. nov.

(Text-fig. 28)

A species that runs to *L. chilénica* Duda (couplet 43) in Duda's 1925 key, but easily distinguishable from it on account of its single pair of dorsocentral bristles.

♂. Ground colour dark brown; head, with exception of occiput, upper orbits, clypeus, palpus and proboscis golden orange; bases of meso- and pteropleuron, whole of metapleuron, haltere, trochanters, extreme bases and apices of all tibiae, and all tarsi yellow; wing yellowish hyaline with yellow veins. Head deeper than long, lightly dusted; frons strongly convex; interantennal keel strongly pronounced; jowls one-quarter height of eye; an upwardly-directed bristle behind the vibrissa and half its length; four pairs of strong interfrontal bristles; ocellar bristle long, as long as internal vertical; external vertical shorter; the orbitals hardly longer than the postvertical; third antennal segment large, rather pointed and densely pilose; arista rather long-haired, two and a half times as long as remainder of antenna. Disc of thorax densely grey-dusted, uniformly covered with dense short setulae; a single pair of fine dorsocentral bristles that reach slightly beyond tip of the semicircular scutellum and a slightly enlarged seta situated just in front of each; fore femur rather swollen, with a row of four fine posterodorsal bristles on the apical two-thirds and similar posteroventrals on apical third; mid femur with a strong preapical anterodorsal bristle; mid tibia with a short anteroventral bristle at 0.55 of its length, progressively longer anterodorsals at 0.27, 0.45 and 0.8, a dorsal as long as this last bristle at 0.75, longer posterodorsals at 0.35 and 0.8 with shorter bristles between them at 0.5 and 0.7, and an apical ventral that is two-fifths the length of basitarsus; hind leg normal. Wing (Text-fig. 28) broad; costa rather densely short haired; interspersed amongst the reclinate hairs on second and third costal sectors are fine short hairs projecting at right angles to costa<sup>1</sup>; second and third costal sectors equal; third vein uniformly curved forwards, not overpassed by costa, and ending well in front of wing-tip; fold of fourth vein not produced to wing-margin, strongly curved forwards; outer angles of discal cell rounded, especially the posterior; alula small and narrow. Abdomen less strongly dusted than disc of thorax, with numerous short hairs

<sup>1</sup> This same character, though seemingly insignificant in this species, may be of value in placing the species in relationship to others as yet undescribed. I have before me an undescribed and obviously closely related species from the Philippines in which these hairs are outstandingly developed and set at an angle to the wing-surface in much the same way as they are in species of the subgenus *Elachisoma* Rondani.

and weak marginal bristles on the tergites; genital capsule hemispherical and densely short haired; clasper with dense sinuate hairs, band-shaped, slightly swollen apically and bearing an incurved black pointed tooth; posterior gonapophysis curved and pointed; pregenital sternite simple. Length about 1.7 mm.

♀ resembling ♂, abdomen broad and flattened; tergites two and four longer than three and five; sternites narrower and broadly separated from the tergites by membrane; cercus weakly sclerotized, with several fine, sinuate hairs.

Holotype ♂. E. NEPAL: Arun Valley, below Tumlingtar, River Sabhaya, west shore, c. 1,800 ft., human excreta in sandy place, 9-22. xii. 1961 (R. L. Coe).

Paratypes 1 ♀, same data; same locality, dead leaves lying in sun on sandy shore, 2 ♂, 22. xii. 1961 (R. L. Coe); INDIA; Silchar, Cachar, 1 ♂, 3. iii. 1911 (C. B. Antram).

### *Leptocera (Limosina) furculisterna* sp. n.

(Text-figs. 29, 30)

A species which, though rather different from *L. vitripennis* Zetterstedt, is probably better likened to it than to any other, on account of the structure of the tergites, which though less strongly differentiated in *vitripennis* are nevertheless differentiated to a noticeable degree. In *vitripennis* the second costal sector is black in contrast to the brown first and third sectors, but in the species described below the costa is uniformly yellow.

♂. A jet-black species, lightly dusted on all but the frontal triangle, the antennal foveolae and a patch anteriorly on the upper sternopleuron; antenna, stem of haltere, fore coxa, all trochanters, basal half of fore femur, extreme bases of mid and hind femora, mid tibia and tarsus, hind tibia with the exception of a broad preapical annulus, last three tarsal segments of hind leg strikingly yellow; last four tarsal segments of fore leg whitish yellow; wing yellowish with yellow veins. Head deeper than long; jowls one-fifth height of eye; ocellar triangle extending to interantennal keel, with three pairs fine hairs; internal vertical bristle longer than the external, the orbitals shorter still, scarcely longer than the postvertical; an upcurved mid jowler bristle that is nearly half as long as vibrissa; third antennal segment short, long-pilose apically, arista situated preapically, rather long-haired and slightly over three times as long as remainder of antenna; two widely-separated pairs dorsocentral bristles; only four rows of interdorsocentral setulae between anterior pair; scutellum semi-triangular; fore femur slightly swollen, with a few fine anterodorsal and posterodorsal hairs; fore basitarsus very narrow, the remaining four tarsal segments becoming progressively more swollen, the most apical broader than the tibia; mid femur with a few weak anterodorsal hairs; mid tibia with a long posterodorsal bristle at 0.92 of its length, a slightly shorter anterodorsal at 0.33 and a short one at 0.8, this last as long as the apical ventral. Wing (Text-fig. 29) with rather convex fore margin; costa densely short-haired on second and third sectors, overpassing third vein to a distance equal to length of anterior crossvein, and with second sector shorter than third; third vein very strongly bowed, firstly towards and then away from costa; first section of third vein much longer than second, equal to second section of fourth vein; fourth and fifth veins ending slightly beyond discal cell; alula very narrow and pointed. Abdomen (Text-fig. 30) fine-haired; tergite two broad, long and heavily sclerotized, the next three tergites narrower, much shorter, weakly sclerotized and broadly separated by membrane (in dry specimens these tergites crumpled and scarcely recognizable as such), the remaining tergites heavily sclerotized; sternites becoming progressively wider and longer towards the apex, the pregenital broad, laterally long-haired, bearing a short-bristled, square median apical keel that is flanked by an inwardly-curved appendage bearing short bristles apically; clasper large, rather rectangular, the exterior surface and anterior margin clothed with fine hair; posterior

gonapophysis short, broad, with a concave posterior margin between two short points. Length about 1.5 mm.

♀ unknown.

Holotype ♂. E. NEPAL: Taplejung Distr., between Sangu and Tamrang, c. 5,200 ft., mixed plants by damp cliff in deep river gorge, 1-11.1962 (R. L. Coe).

Paratype. Same locality and altitude, mixed shrubs in deep gorge, 1 ♂, x-xi.1961 (R. L. Coe).

*Leptocera (Limosina) sp. near furculisterna* Deeming

(Text-fig. 31)

Due to their rubbed condition, no name is given to a pair of specimens of an undescribed species closely resembling *L. furculisterna*, but the characters necessary for distinguishing it from that species are given.

♂. Interantennal keel, extreme anterior margin of frons, and mouth-margin medially yellow; fore coxa black; fore femur with exception of extreme apex black; hind tibia lacking preapical black annulus; all tarsi dirty yellow, the apical segments distinctly infuscated; pregenital sternite (Text-fig. 31) with a double row of bristles bordering the weakly sclerotized median apical keel, lacking the flanking appendages, and with a pair of long bristles near its lateral margins; clasper rectangular, with several rather stout bristles basally on the exterior surface and a pair of minute teeth apically on the posterior margin.

♀ resembling ♂, tergites of the same differentiated structure as the male; cercus with one long sinuate hair and several shorter ones.

E. NEPAL: Arun Valley, below Tumlingtar, River Sabhaya, west shore, c. 1,800 ft., dead leaves lying in sun on sandy shore, 1 ♂, 22.xii.1961; Arun Valley, east shore of River Arun below Tumlingtar, c. 1,800 ft., evergreen shrubs bordering dry stream beds, 1 ♀, 14-23.xii.1961 (R. L. Coe).

*Leptocera (Limosina) monorbiseta sp. n.*

(Text-fig. 32)

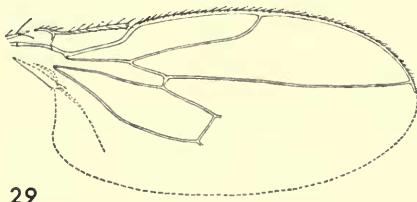
A species best likened to *L. mollis* Richards on the basis of the single orbital bristle, but differing from it in the colour of the head and in other respects. Due to the appearance of the antenna, it could be mistaken for a species of the subgenus *Acuminiseta* Duda, but the position of the arista on the third antennal segment places it in *Limosina*.

♀. Ground colour black, lightly dusted; head, with exception of clypeus, proboscis, a triangular patch at base of vibrissa, a fine line extending from base of internal vertical bristle far into the occiput, and apex of third antennal segment, yellow; all trochanters, extreme base and apex of mid tibia, hind tibia with exception of a broad preapical annulus and all tarsi bright yellow; haltere, fore femur, and fore tibia with exception of an indistinct central annulus dirty yellow. Head much deeper than long; frons strongly projecting in front of eye; face retreating beneath; eye five times as high as jowls; three pairs of short weak interfrontal hairs; orbits bearing a single orbital bristle and a row of minute setae; external vertical bristle longer than internal, which is equal to the ocellar; postvertical bristle minute, slightly shorter than the incurved upper postocular; vibrissa long, with a few weak hairs behind; the upwardly-directed

buccal bristle short; third antennal segment heavily pilose apically, giving it a pointed appearance although its apex is rounded; arista inserted almost apically, three times as long as remainder of antenna and with hairs of moderate length. Setulae on disc of thorax long and fine, the pre-scutellar pair no longer than the others; two pairs of long dorsocentral bristles, the more anterior pair the shorter and with eight rows setulae between; scutellum semicircular, the lateral pair marginal bristles scarcely longer than the distance separating them from the apical pair; fore femur with a pair of strong posteroventral bristles preapically; mid femur with a strong preapical anterior bristle; mid tibia with short anterodorsal bristles at 0.27 and 0.68 of its length, similar posterodorsals at 0.37, 0.51 and 0.68, a long dorsal at 0.74 and a long apical ventral; mid basitarsus twice as long as second segment; second segment of hind tarsus strongly swollen, slightly wider than basitarsus; wing (Text-fig. 32) much broader than thorax, with densely haired costa and narrow and pointed alula; second costal sector shorter than third; second vein strongly, third weakly sinuate; basal section of third vein with two breaks, shorter than second section; fourth vein produced beyond discal cell as a rather indistinct fold that does not reach wing-margin; abdomen very flat dorsally, rounded ventrally; first tergite medially unsclerotized; tergites 2-5 short, subequal, becoming progressively narrower; sternites weakly sclerotized and broadly separated from tergites by membrane; cercus with a long sinuate dorsal and apical hair and with several much shorter hairs ventrally. Length about 1.7 mm.

♂ unknown.

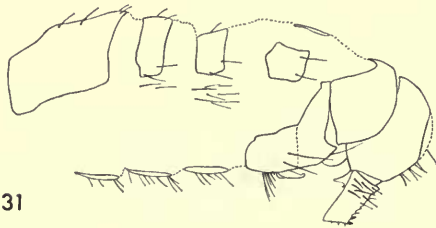
Holotype ♀. E. NEPAL: Taplejung Distr., old mixed forest above Sangu, c. 6,200 ft., 25-28.x.1961 (R. L. Coe).



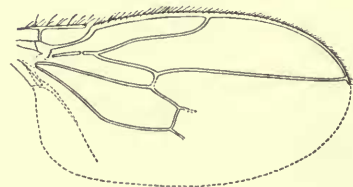
29



30



31



32

FIGS. 29-32. *Leptocera* (*Limosina*) spp. 29, *furculisterna* sp. n., right wing; 30, *furculisterna* sp. n., ♂ abdomen; 31, sp. near *furculisterna* sp. n., ♂ abdomen; 32, *monorbiseta* sp. n., right wing.

### *Leptocera* (*Trachyopella*) *obliqua* Richards

*Leptocera* (*Trachyopella*) *obliqua* Richards, 1963b : 129.

E. NEPAL: Taplejung Distr., above Sangu, c. 6,500 ft., evergreen scrub, 1 ♂, 5-13.x.1961 (R. L. Coe).

Described from the Mariana and Caroline Islands. There are specimens in BMNH from Java, Celebes and Malaya.

*Leptocera (Coproica) hirtula* Rondani

*Limosina hirtula* Rondani, 1880 : 38.

E. NEPAL: Taplejung Distr., Dobhan, c. 3,500 ft., shady places on shrubby slope above River Tamur, 2 ♀, 21-27.i.1962 (R. L. Coe).

A common and cosmopolitan species.

REFERENCES

- ADAMS, C. F. 1905. Diptera Africana—I. *Kans. Univ. Sci. Bull.* **3** : 147-208.
- BRUNETTI, E. 1913. Zoological Results of the Abor Expedition 1911-12. Diptera. *Rec. Indian Mus.* **8** : 149-190.
- 1924. Diptera of the Siju Cave, Garo Hills, Assam. I. Tipulidae, Tabanidae, Anthomyiidae, Acalyptrate Muscidae and Phoridae. *Rec. Indian Mus.* **26** : 99-106.
- COE, R. L. 1962. A further collection of Diptera from Jugoslavia, with localities and notes. II. *Glas. Muz. srp. Zeml. (B)* **18** : 95-136.
- COLLIN, J. E. 1902. Four new species of Diptera (Fam. Borboridae) found in Britain. *Entomologist's mon. Mag.* **13** : 55-60.
- 1925. Diptera (Cyclorrhapha) from Spitzbergen. Results of the Oxford Expedition to Spitzbergen, 1924. *Ann. Mag. nat. Hist. (9)* **16** : 332-337.
- 1956. Some new British Borboridae (Diptera) *J. Soc. Br. Ent.* **5** : 172-178.
- DEEMING, J. C. 1964. A remarkable new species of *Leptocera* from Christmas Island and New Guinea. *Opusc. ent.* **29** : 164-167.
- DUDA, O. 1918. Revision der europäischen Arten der Gattung *Limosina* Macquart (Dipteren). *Abh. zool.-bot. Ges. Wien* **10** : 1-240.
- 1920. Revision der altweltlichen Arten der Gattung *Sphaerocera* Latreille (Dipteren). *Tijdschr. Ent.* **62** : 1-38.
- 1923. Revision der altweltlichen Arten der Gattung *Borborus (Cypsel)* Meigen (Dipteren). *Arch. Naturgesch.* **89** : 35-112.
- 1925. Die aussereuropäischen Arten der Gattung *Leptocera* Olivier = *Limosina* Macquart (Dipteren) mit Berücksichtigung der europäischen Arten. *Arch. Naturgesch.* **90** (A) (1924) : 5-215.
- 1938. Sphaeroceridae (Cypselidae). In LINDNER: *Fliegen palaearkt. Reg.* **57** : 1-182.
- HACKMAN, W. 1965. On the genus *Copromyza* Fall. (Dipt., Sphaeroceridae), with special reference to the Finnish species. *Notul. ent.* **45** : 33-46.
- 1967. Sphaeroceridae (Diptera) from Madagascar. *Notul. ent.* **47** : 25-36.
- HALIDAY, A. H. 1836. British Species of the Dipterous Tribe Sphaeroceridae. *Entomological Magazine* **3** : 315-336.
- MEIGEN, J. W. 1830. *Systematische Beschreibung der bekannten Europäischen zweiflügeligen Insekten.* **6** : 1-401. Aachen & Hamm.
- RICHARDS, O. W. 1930. The British Species of Sphaeroceridae (Borboridae, Diptera). *Proc. zool. Soc. Lond.* **18** : 261-345.
- 1952. Two new Austrian species of *Leptocera* Oliv. (Dipt. : Sphaeroceridae). *Proc. R. ent. Soc. Lond. (B)* **21** : 89-91.
- 1962a. Species of *Copromyza* allied to *sordida* (Diptera : Sphaeroceridae) with notes on types of African Sphaeroceridae described by C. F. Adams. *J. Kans. ent. Soc.* **35** : 364-368.
- 1962b. Contribution à l'étude de la faune d'Afghanistan. 42. Diptera, Sphaeroceridae. *Entomologist's mon. Mag.* **97** : 177-179.

- RICHARDS, O. W. 1963a. Sphaerocerid flies from South and Central America in the collection of the California Academy of Sciences (Diptera). *Pan-Pacif. Ent.* **39** : 231-246.
- 1963b. Diptera : Sphaeroceridae (Borboridae). *Insects Micronesia* **14** : 109-134.
- RONDANI, C. 1880. Species Italicae ordinis Dipteriorum (Muscaria, Rnd.) collectae et observatae. Stirps XXV. Copromyzinae Zett. *Bull. Soc. ent. Ital.* **12** : 3-45.
- STENHAMMAR, C. 1853. Copromyzidae Scandinaviae granskade och beskrifne. *K. svenska Vetensk.Akad. Handl.* **41** : 257-442.
- 1855. *Copromyzinae Scandinaviae*. Holmiae. 184 pp.
- VILLENEUVE, J. 1917. Espèces nouvelles de Diptères de la famille des Cypselidae (Borboridae). *Bull. Soc. ent. Fr.* **18** : 333-338.
- WIEDEMANN, C. R. W. 1824. *Analecta Entomologica ex Museo Regio Hafniensi maxime congesta*. (154 Dipter., 3 Hymenopt., 2 Coleop.) Kiliae, (Reg. typogr. Schol.) **4**. 60 pp.

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